



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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January 6, 2000

TO: Internal File

THRU: Sharon Falvey *SKF*

FROM: Wayne H. Western *WHW*

RE: Wild Horse Ridge Addition, Co-Op Mining, Bear Canyon Mine ACT/015/025-SR98

## SUMMARY:

I reviewed the engineering and bond sections for Wild Horse Ridge amendment for the Bear Canyon Mine. Pete Hess helped me in the review of the explosives section. Since the plan is deficient, I did not reviewed bond section in detail. The bond will be calculated when the reclamation plan is completed.

## TECHNICAL ANALYSIS:

## ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

## GENERAL

## PERMIT AREA

Regulatory Requirements: 30 CFR Sec. 783.12; R645-301-521.

## Analysis:

The disturbed area boundaries are shown on Plate 2-4. The disturbed acreage are listed in Section 3.3.14 on Table 3.3-1, Surface Disturbance Summary. The Permittee will increase the disturbed area from 29.10 Acres to 35.99 Acres. None of the new disturbed acreage contains lands disturbed by mining activities prior to 1977. The new disturbed areas include the Wild

Horse Ridge access road, conveyor belt access/topsoil stockpile, upper conveyor belt access roads No. 1 and No. 2, and the Wild Horse Ridge Blind Canyon seam portal area.

Plate 2-1 shows the permit boundaries. The Permittee listed their leases Section 2.2.2. Since the permit boundaries and the lease boundaries may not be the same the Permittee needs to give the Division a legal description of the permit boundaries.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-521.190**, The Permittee must give the Division a legal description of the permit area and list the permitted acreage.

**R645-301-121.200**, The Permittee must explain why the number of disturbed areas was dropped from 17 acres to 12 acres on Page 3-10 of the amendment since the Permittee is not proposing to reduce the disturbed any disturbed areas.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

### **Analysis:**

#### **Affected Area Boundary Maps**

The Permittee did not give the Division an affected area boundary map. The Permittee did give the Division a permit boundary map, Plate 2-1, a subsidence map Plate 3-3 and a mine map Plate 3-4. The information on those maps is enough for the Division to determine the affected area boundaries.

#### **Existing Structures and Facilities Maps**

The only existing structure in the Wild Horse Ridge area mentioned by the Permittee is a hunting cabin shown on Plate 2-4G.

### **Existing Surface Configuration Maps**

The Permittee did not give the Division a map showing the existing surface configuration for the Wild Horse Ridge amendment.

### **Mine Workings Maps**

The Permittee gave the Division a map that shows the mine workings in the Blind Canyon Seam and Tank Seam.

### **Permit Area Boundary Maps**

Plate 2-1, Permit Area, and other maps show the permit boundaries.

### **Surface and Subsurface Ownership Maps**

Plate 2-2 shows the surface ownership and Plate 2-3 shows the subsurface ownership.

### **Contour Maps**

The Permittee did not give the Division detailed contour maps for the proposed premining disturbed area. The Division needs premining contour maps to evaluate the proposed operational and reclamation plans.

### **Findings:**

The information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-521.150**, The Permittee must give the Division a detailed maps that shows the existing surface configuration (topographic maps) of the proposed disturbed and adjacent area. The topographic map show be of a scale no smaller than 1 inch equals 50 feet and contour intervals of 2 feet.

## **OPERATION PLAN**

### **MINING OPERATIONS AND FACILITIES**

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

## **Analysis:**

### **General**

In Section 3.4 the Permittee states "Co-Op started its mining operating through an existing mine in the Blind Canyon Seam and later extended into the Hiawatha seam below. Access to the Hiawatha Seam was made in the summer of 1986 through two new portals in the outcrop, and through a rock slope tunnel from the Blind Canyon seam. In 1995, Co-Op extended operations into the Tank Seam, located above the Blind Canyon seam. In 1999, Co-Op plans to extend operations into the Blind Canyon and Tank Seams East of the Bear Canyon Fault. The four main seams in the Bear Canyon property are, the Tank Seam, the Bear Canyon seam, Blind Canyon seam and Hiawatha seam. The Permittee does not plan to mine the upper Bear Canyon seam due to the proximity of the seam to the Blind Canyon Seam (0.30 feet interburden). Nor do they plan to mine the Hiawatha Seam in Wild Horse Ridge due to the thinning of the seam. Mining plan, sequence and projected development for the Bear Canyon, Hiawatha and Tank seams are shown on Plate 3-4A, 3-4B and 3-4C respectively."

### **Type and Method of Mining Operations**

In Section 3.4.1.2 the Permittee states "The mining at the Bear Canyon complex is done by continuous miners. The miners discharge into shuttle cars (diesel or electric) which carry the coal to a feeder breaker. The feeder breaker discharges the coal onto the belt conveyor where it is taken out of the mine."

### **Facilities and Structures**

A list of new structures associated with the Wild Horse Ridge is given in Appendix 3A. The new structures are shown on Table 3A-1, in Appendix 3A. The new structures include a conveyor belt, substation, shop building, water tank and fuel tank.

## **Findings:**

The Permittee met the minimum requirements of this section.

## **EXISTING STRUCTURES**

Regulatory Reference: 30 CFR Sec. 784.12; R645-301-526.

**Analysis:**

The Permittee states that the only existing structure in the minable portion of the permit area consists of a hunting lodge that exists in the Wild Horse Ridge area. The hunting cabin is shown on Plate 2-4G.

**Findings:**

The Permittee met the minimum requirements of this section.

**RELOCATION OR USE OF PUBLIC ROADS**

Regulatory Reference: 30 CFR Sec. 784.18; R645-301-521, -301-526.

**Analysis:**

On Page 3-9 the Permittee states that no public roads are within the permit area. However, on Page 3-19 the Permittee states:

No public owned roads exist in the Wild Horse Ridge area. However, the access road through the mine site is used by private land owners and USFS patrons for access. The lease agreement between Co-Op and C.O.P. Coal Development requires Co-Op to allow access through the mine site for representatives of the property owners and USFS access.

The Permittee must be consistent when describing the Wild Horse Ridge access road. A public road is defined in Section R645-301-521.123 and R645-301-521.133 as all roads for which there is substantial (more than incidental) public use. If the public has substantial use of the access road then it could be considered public.

**Findings:**

The information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-121.200**, The Permittee must give the Division more information about the who uses the access road and how often. The Division needs this information to determine if the access road should be classified as a private or public road. Once the Division has the information they will make that determination.

## **COAL RECOVERY**

Regulatory Reference: 30 CFR Sec. 817.59; R645-301-522.

### **Analysis:**

The Permittee gave the Division a general commitment to maximize coal recovery. The Division needs to have more detailed information. Since federal coal is involved, the Permittee needs to have an approved R2P2 (Resource Recovery Protection Plan). The information in an approved R2P2 is helpful for determining the adequacy of the coal recovery plan.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-522**, The Permittee must give the Division more details about the coal recovery plan. The type of information the Division needs should be contained in an approved R2P2.

## **SUBSIDENCE CONTROL PLAN**

Regulatory Reference: 30 CFR Sec.784.20, 817.121, 817.122 R645-301-521,-301-525,-301-724.

### **Analysis:**

#### **Renewable resources survey**

The Permittee states in Section 3.4.2.3 that no retreat mining will occur under escarpment areas or within the protection zones as shown on Plate 3-3. However, Plate 3-3 does not identify the escarpment areas or protection areas. Renewable resources that could be affected by subsidence include escarpments that if failed could result in detrimental impacts for down stream water quality or raptor nests.

The Permittee states that no stream channels lie over the minable portion of the permit area and then states that barrier zones will be left to protect adjacent stream channels. The Permittee needs to clarify those statements, either stream channels exist within subsidence zones or not.

The Permittee must clarify several issues (1) does State appropriated water supplies exist within the permit area with emphasis on the Wild Horse Ridge subsidence zone, (2) what renewable resources such as timber or grazing exist in the permit area with emphasis on the Wild Horse Ridge subsidence zone and (3) what manmade structures, such as the hunting cabin and roads, exist in the subsidence zones?

### **Subsidence control plan**

1. The Permittee proposes to use room-and-pillar mining to extract all the coal in the Bear Canyon complex. The Permittee expects to recover 75% of the coal in full extraction areas and 50% in first mining areas. The sequence and timing of mining is shown on the mine maps 3-4A, Blind Canyon Seam (lower), and 3-4C, Tank Seam (upper). Note: no mining is scheduled for the Hiawatha Seam in the Wild Horse Ridge project.
2. The Permittee shows the underground workings for the Blind Canyon Seam (lower) on Plate 3-4A and the Tank Seam (upper) on Plate 3-4C. Plate 3-3 shows the projected subsidence for the Wild Horse Ridge project.

Some information on Plate 3-3 is not clear. Plate 3-3 is not at the same scale as the mine maps. The Division is having a difficult time analyzing the data when the maps are at different scales. The subsidence and buffer zones are not clearly labeled. The Permittee needs to show the subsidence and buffer zones hatch marks in the map legend.

Plate 3-3 shows that subsidence will occur outside the permit boundary (NW1/4 SE1/4 Section 19). Subsidence is not allowed to occur outside the permit boundary.

The Permittee needs to clarify where full extraction mining will occur. On Plate 3-4A the Permittee listed all panels as development and on Plate 3-4C all panels are listed development/retreat. The Division is not sure if development means first mining and retreat means second mining.

3. The descriptions of the physical conditions that affect the likelihood or extent of subsidence are addressed in the geologic section of the TA.
4. The Permittee described the monitoring program in Appendix 3C in Section 5 of the amendment. The Permittee committed to installing 26 monitoring points to the Wild Horse Ridge area. The stations will be monitored yearly plus they will conduct an annual on the ground survey to look for subsidence effects. The subsidence monitoring program seems adequate.

5. The Permittee proposes to protect sensitive surface features from subsidence by first mining only. The Permittee needs to explain why the areas where first mining only occurred will be stable indefinitely.

The estimated amount of subsidence in the Blind Canyon Seam is 3.2 feet and subsidence in the Tank Seam is 4.1 feet. The maximum amount of subsidence in the Wild Horse Ridge area is 7.3 feet.

6. The Permittee needs to clarify the anticipated effects of planned subsidence. Those effects include the maximum amount of subsidence, the areas where subsidence will occur. Note: on Plate 3-3 the Permittee shows that subsidence will occur outside the permit boundary in Section 19.
7. The Permittee did not describe the measures that will be taken to mitigate or remedy any subsidence-related damage.

#### **Performance standards for subsidence control**

The Permittee is required to meet the performance standards for subsidence control.

#### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-121.200,** The Permittee must identify on Plate 3-3 the subsidence protection zones.

**R645-301-121.200,** The Permittee must clearly state whether the stream channels exist within or near the Wild Horse Ridge subsidence zone.

**R645-301-121.200,** The Permittee must give the Division a copy of Plate 3-3 at a scale of 1" equals 500". The Division needs to have the subsidence maps and mine maps at the same scales to evaluate the potential affects of subsidence.

**R645-301-121.200,** The Permittee must clarify where full extraction mining will occur. On Plate 3-4A the Permittee listed all panels as development and on Plate 3-4C all panels are listed as development/retreat. The Division is

not sure if development means first mining and retreat means second mining. The Division needs that information clarified so they can determine what areas are likely to subside.

**R645-301-121.200**, The Permittee must clarify why the areas of first mining only will remain stable over time.

**R645-301-141**, The Permittee must conduct all mining and reclamation activities within the permit boundaries. On Plate 3-3 the Permittee shows that subsidence will occur outside the permit boundaries (NW1/4 SE1/4 of Section 19). The Permittee must either revise the mine plans so that subsidence occurs only in the permit area or expand the permit area to include the NW1/4 SE1/4 of Section 19.

**R645-301-525.120**, The Permittee must describe all renewable resources within the permit area with emphasis on the Wild Horse Ridge subsidence zone, such as but not limited to State appropriated water, grazing and timber.

**R645-301-525.120**, The Permittee must identify all manmade structures, such as roads, the Wild Horse Ridge mine facilities and the hunting cabin, on the Plate 3-3 or other subsidence maps.

**R645-301-525.450**, The Permittee must show the areas where first and full extraction mining will occur on the mine maps. The Permittee must also show on Plate 3-3 those areas that need to be protected from subsidence and why. The Permittee must state what angle-of-draw was used to determine the subsidence zones and why.

**R645-301-525.480**, The Permittee must describe how subsidence damage will be mitigated.

## **SLIDES AND OTHER DAMAGE**

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

### **Analysis:**

The Permittee did not incorporate a description of the procedure for reporting a slide or other emergencies. The information in the MRP is inadequate to address this requirement.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-515.100**, The Permittee must describe how they will report slides and other emergencies.

**ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

**Analysis:**

**Road Classification System**

All new and modified roads associated with the Wild Horse project were classified as primary roads. The Division agrees with those classifications.

The Permittee is inconsistent in referring to the roads in the Wild Horse project. On Plate 3-5D the Permittee refers to the main access road as No. 3 Mine Access Road. On Page 3-6 of the amendment the Permittee calls that road the Wild Horse Ridge Access Road. Note: the Division did not list all the inconsistency regarding the main access road name.

**Road Systems**

- (1) The cross sections show the road width and drainage. The roads slope at 2% and ditches parallel the roads to direct runoff. The cross sections are insufficient to show cut and fill requirements. That information is needed to determine reclamability. The Permittee must give the Division detailed cross sections of the roads. The cross section must show the operational and reclamational cuts and fills. If the Permittee proposes to leave cut slopes then they must meet the requirements of R645-301-527.250.
- (2) Contain the drawings and specifications of each proposed road that is located in the channel of an intermittent or perennial stream, as necessary for approval of the road by the Division;

*The Division hydrologist will address this issue.*

- (3) Contain the drawings and specifications for each proposed ford of perennial or intermittent streams used as a temporary route, as necessary for approval of the ford by the Division;

The Division hydrologist will address this issue.

- (4) Contain a description of measures to be taken to obtain approval of the Division for alteration or relocation of a natural stream channel;

The Division hydrologist will address this issue.

- (5) Contain the drawings and specifications for each low-water crossing of perennial or intermittent stream channels so that the Division can maximize the protection of the stream; and,

The Division hydrologist will address this issue.

- (6) In Section 3.6.12 of the amendment the Permittee gives a general reclamation plan for the main access road. The reclamation plan is inadequate because it does not have sufficient details. The specific details will be addressed in the reclamation section of the TA.

*Performance standards.*

- (1) Control or prevent erosion, siltation, and the air pollution attendant to erosion, including road dust and dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices;

This section will be addressed by the Division hydrologist.

- (2) Control or prevent damage to fish, wildlife, or other habitat and related environmental values;

This section will be addressed by the Division biologist.

- (3) Control or prevent additional contributions of suspended solids to streamflow or runoff outside the permit area;

This section will be addressed by the Division hydrologist.

- (4) Neither cause nor contribute to, directly or indirectly, the violation of State or Federal water quality standards applicable to receiving waters;

This section will be addressed by the Division hydrologist.

- (5) Refrain from seriously altering the normal flow of water in streambeds or drainage channels;

This section will be addressed by the Division hydrologist.

- (6) Not locate any road in the channel of an intermittent or perennial stream unless specifically approved by the Division. Roads shall be located to minimize downstream sedimentation and flooding;

This section will be addressed by the Division hydrologist.

- (7) Prevent or control damage to public or private property, including the prevention or mitigation of adverse effects on lands within the boundaries of units of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including designated study rivers, and National Recreation Areas designated by Act of Congress.

The Wild Horse Ridge Team needs to make this finding.

- (8) The Permittee needs to describe the road surface material. Specially the Division needs to know if the material is nonacid and nontoxic.
- (9) The Permittee must agree to repair as soon as possible any road damage. That commitment was not found in the MRP.

*In addition to the above, primary roads will meet the following requirements:*

- (1) Primary No.3 Mine Access Road is the main road to the portal area. Certified maps showing the road are Plate 3-5D Road-Details and Plate 2-4G, 2-4F Surface Facilities.

Primary Conveyor Access Road No.1 is the lower conveyor access road and is shown on Plate 3-5D Road-Details and Plate 2-4F Surface Facilities.

Primary Conveyor Access Road No.2 is the upper conveyor access road and is shown on Plate 3-5D Road-Details and Plate 2-4G Surface Facilities.

The cross sections show the road width and drainage. The roads slope at 2% slope and have parallel ditches that direct runoff. The cross sections are insufficient to show cut and fill requirements. That information is needed to determine reclamability. The Permittee must give the Division detailed cross section of the road. The cross section must show the operational and reclamational cuts and fills. If the Permittee proposes to leave cut slopes then they must meet the requirements of R645-301-527.250.

- (2) Appendix 3O-6 contains the slope stability study conducted by Dames & Moore. The consultant outlined the soil and rock sampling, procedures and testing. The stability analysis was described. All slopes had a minimum safety factor of 1.6, and the minimum required safety factor is 1.3.
- (3) Most of Primary No.3 Mine Access Road will be constructed on an existing dirt road. By upgrading the existing dirt road the Permittee will be minimizing erosion. Since the roads must be constructed in a narrow canyon, the Permittee has limited options about where to place the road. The Division reviewed the road designs and concluded that the erosion will be minimized and that the roads are located on the most stable available surface.
- (4) The Permittee does not propose to construct fords in any perennial or intermittent streams.
- (5) The Division hydrologist will address culvert sizing.
- (6) The Permittee did not describe how the roads will be surfaced and what type of traffic is expected. See R645-301-534.320

*Primary road certification.*

The designs submitted by the Permittee were certified.

**Other Transportation Facilities**

The Permittee did not include detailed descriptions of the conveyor system. See the requirements of R645-301-527.200 and R645-301-521.170.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the

requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-121.200**, The Permittee must be consistent when refer to the name of the main access road to the Wild Horse pad area. Sometime the road is called the Wild Horse Ridge Access Road and other times it is called No. 3 Mine Access Road.

**R645-301-527.200**, The Permittee must give the Division detailed cross section the show the operational and reclaimed cuts and fills. Those cross sections are needs to insure proper road construction and reclamation.

**R645-301-527.250**, The Permittee must give the Division detailed information on any cut slopes that will not be fully reclaimed.

**R645-301-534.140**, The Permittee must give the Division detailed reclamation plans for all road and sections of roads that will be reclaimed.

**R645-301-534.120 and R645-301-534.320**, The Permittee must describe the road surface material. Specially the Division needs to know whether the material is acid or toxic forming.

**R645-301-527.240**, The Permittee must commit to repair any road damage as soon as possible.

**R645-301-534.320**, The Permittee must describe the type of traffic that will be on the roads.

## **SPOIL AND WASTE MATERIALS**

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

### **Analysis:**

#### **Disposal of noncoal mine wastes.**

Noncoal waste will be placed in metal dumpsters that are on the property. A local trash

collector is contracted to replace these bins when they are near capacity.

**Coal mine waste**

The Permittee must state how coal mine waste will be disposed. The Division has had several problems involving mines that did not have disposal plans for coal mine waste based on assumptions that no coal mine waste would be brought to the surface. Often that assumption is wrong and then Permittee has no plan for disposal of coal mine waste. To avoid such problems the Division needs the Permittee to have a contingency plan for handling coal processing waste.

**Refuse piles**

The Permittee does not propose to construct a refuse pile.

**Impounding structures**

The Permittee does not propose constructing an impoundment out of coal mine waste.

**Burning and burned waste utilization**

The Permittee did not address burning and burned waste utilization. See R645-301-528.323

Return of coal processing waste to abandoned underground workings.

The Permittee does not propose to return coal processing waste to abandoned underground workings at the Wild Horse Ridge pad.

**Excess Spoil: Valley fills/head-of-hollow fills**

The Permittee does not propose valley fills/head-of-hollow fills.

**Excess Spoil: Durable rock fills**

The Permittee does not anticipate excess spoil.

**Excess Spoil: Preexisting benches**

The Permittee does not anticipate excess spoil.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-528.323**, The Permittee must address how burning and burned waste material will be handled.

**R645-301-536**, The Permittee must address how coal mine waste from the Horse Canyon project will be handled if the material must be brought to the surface and if the material cannot be returned underground.

**HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

**Analysis:**

The Permittee did not propose to discharge water into an underground mine.

**Gravity discharges**

The Permittee did not propose to use gravity discharge.

**Impoundments**

- (1) Pond D is not an MSHA pond, therefore special MSHA requirements do not apply to the pond.
- (2) The plans for the pond have been certified by a professional engineer, see Plate 7-11 and Appendix 3O.
- (3) The pond has a static safety factor of at least 1.44. The minimum standard is a safety factor of 1.3.
- (4) Impoundments shall have adequate freeboard to resist overtopping by waves and

by sudden increases in storage volume. The Division hydrologist will address this issue.

- (5) Foundations and abutments for an impounding structure shall be stable during all phases of construction and operation and shall be designed based on adequate and accurate information on the foundation conditions. The Division will monitor the construction of the pond to make sure that the foundations are installed correctly.
- (6) The Permittee did not address how the slopes will be protected against sudden drawdown. Sudden drawdown failure happens when pore pressure in the embankment causes failure.
- (7) Faces of embankments and surrounding areas shall be vegetated, except that faces where water is impounded maybe riprapped or otherwise stabilized in accordance with accepted design practices. The Division hydrologist will address this issue.
- (8) Spillways. An impoundment shall include either a combination of principal and emergency spillways, a single open-channel spillway, or, be configured as an impoundment that relies primarily on storage to control the runoff from the applicable design precipitation event. The Division may approve a single open-channel spillway that is: of nonerodible construction and designed to carry sustained flows; or, earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected. Except impoundments that rely primarily on storage to control the runoff, the required design precipitation events for an impoundment having spillways are: for an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a) a 100-year 6-hour event, or greater event as specified by the Division; and, for an impoundment not meeting the size or other criteria of 30 CFR Sec. 77.216(a), a 25-year 6-hour event, or greater event as specified by the Division. In lieu of meeting the single open-channel spillway requirements, the Division may approve an impoundment that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer or qualified registered professional land surveyor that the impoundment will safely control the design precipitation event, the water from which shall be safely removed in accordance with current, prudent, engineering practices. Such an impoundment shall be located where failure would not be expected to cause loss of life or serious property damage, except where: in the case of an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a), it is designed to control the precipitation of the probable maximum precipitation of a 6-hour event, or greater event as specified by the Division; or, in the case of an impoundment not meeting the size or other criteria of 30 CFR Sec. 77.216(a), it is designed to control the precipitation of a 100-year

6-hour event, or greater event as specified by the Division. The Division hydrologist will address this issue.

- (9) No highwalls are associated with the Pond D.
- (10) Inspections. The Division will verify that the inspections were done during critical construction stages.

**Ponds, impoundments, banks, dams, and embankments**

Each application shall include a general plan for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam, or embankment within the proposed permit area. Each general plan shall:

- (1) The plans for sediment Pond D were prepared by a professional engineer.
- (2) Plate 7-11 shows the plans and the cross sections for Pond D.
- (3) Contain preliminary hydrologic and geologic information required to assess the hydrologic impact of the structure. This information will be checked by the Division hydrologist and geologist.
- (4) Contain a survey describing the potential effect on the structure from subsidence of the subsurface strata resulting from past underground mining operations if underground mining has occurred. The location of Pond D is not shown on Plate 3-3 Subsidence Map. The Division needs to have the location of the Wild Horse Ridge strictures shown on Plate 3-3 so we can evaluate subsidence effects. See R645-301-525.213.
- (5) The Division does not require any additional plans for Pond D.

Each detailed design plan for a structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall:

- (1) The plans for sediment Pond D were prepared by a professional engineer.
- (2) Plate 7-11 and Appendix 3O shows the plans and cross sections for Pond D.
- (3) Describe the operation and maintenance requirements for each structure. The Division hydrologist will address this issue.

- (4) The reclamation timetable on Page 3-60 does not show when the pond will be removed. See R645-301-542.100.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-533.300**, The Permittee must show that Pond D will not fail during sudden drawdown.

**R645-301-525.213**, The Permittee must address how the pond will be protected from subsidence.

**R645-301-542.100**, The Permittee must give the Division a timetable for when Pond D will be removed.

**SUPPORT FACILITIES AND UTILITY INSTALLATIONS**

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

**Analysis:**

The Permittee did not address the requirements of R645-301-526.200 through R645-301-526.222. Those requirements state that the Permittee will comply with State and federal regulations.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-526.200 through R645-301-526.222**, The Permittee must address these sections. They must describe how support facilities will be installed and operated. They must also make specific commitments to the Division about the facilities.

## **SIGNS AND MARKERS**

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

### **Analysis:**

The current MRP and the Wild Horse Ridge Amendment do not specifically address the signs and markers requirements listed in R645-301-521.

### **Findings:**

**R645-301-521**, The Permittee must address the signs and markers requirements as listed in this section. The information is not listed in the MRP or the Wild Horse Ridge amendment.

## **USE OF EXPLOSIVES**

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68;  
R645-301-524.

### **Analysis:**

#### **Blast Design**

The blast design submitted as Appendix 3-M describes one design for two different types of shots. The purpose of the submitted design is to address the requirements of 524.210, which involve shooting within 1,000 feet of a public building, church, school, dwelling, or community or institutional building, or within 500 feet of an active or abandoned underground mine.

Concerning road construction for the Wild Horse Ridge conveyor access road, the Permittee must state that no public buildings, schools, dwellings, etc. are within 1,000 feet of the proposed blasting area and that the Bear Canyon #1 and #2 Mines are outside the 500 foot distance requirement. The submittal does state that no buildings of any type are within one thousand feet of the blasting area.

As indicated above, the blast verbiage submitted as Appendix 3-M will be used to break large rocks that are too large for machinery to handle and to break bedrock encountered during road construction. No sketches have been provided by the applicant to show a drilling pattern. Irecoal D378 permissible explosive is to be the breaking agent used. The satchel type directional charge is what the applicant has used to break massive boulders on other jobs. It is not an explosive to be used where drilled patterns have been established. The Permittee should consider using a non permissible

rock powder that would provide better breakage. Other problems with the blasting plan include the following:

1) "Holes to be used will be 1 and 1/4" diameter, 4' deep and will be spaced 4' apart." Dynamite cartridges are 1 and 1/4" in diameter and eight inches long. A 1 and 1/4" cartridge will not go in a 1 and 1/4" hole.

2) Although the four foot burden and four-foot spacing is assumed to be for the bed rock removal, (indicative of bench blasting), 0.6 pounds of explosive per each hole (assuming standard 1 and 1/4" X eight inch sticks) equates to 1.2 sticks per hole. If a four-foot hole depth is used with a four-foot burden, and assuming yellow to white sandstone is the medium being fractured, it is felt that the powder factor is much too low to achieve adequate breakage of the medium. The design could use up to three standard sticks of powder and retain two feet of stemming per hole. The submitted design should also show that burden and spacing may be varied to achieve adequate breakage of the medium. If three sticks of powder are used per hole, the shot would only initiate three holes per round to stay under the five-pound limit.

Staying under the five-pound limit is not necessary as the meeting of the requirements stated under R645-301-524.410 is not necessary. No residents or public dwellings are within one half mile of the blasting area. The blast design should be prepared by the certified blaster at the Mine. It is recommended that no more than ten holes be shot per round during bed rock fracturing and removal. This is again determined by the State certified blaster.

3) Should it be the Permittee intents to use four foot holes with four foot spacing on boulders, this needs to be so stated, but is unclear at this point. As noted above, it is assumed that the explosive to be used is the Irecoal D 378, which is a satchel type directional charge to be used for boulder fracturing. No explosive type is mentioned for any bench blasting.

#### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-524.230 Blast Design,** The Permittee needs to confirm that no public buildings, schools, churches, dwellings or community or institutional buildings exist within one thousand feet of the blasting area, and that there are no underground mines within 500 feet of the blasting area. The Permittee must state the distance from the potential blasting zone to the access road and hunting cabin

**R645-301-524.230 and 240**, The Division finds the blast design inadequate because:

1. A drawing of the blasting pattern was not included.
2. The Permittee wants to place a satchel type directional charge in the blasting holes.
3. The Permittee must state the correct diameter hole that will be used to handle a 1 1/4" charge. A 1 1/4" diameter charge will not fit into a 1 1/4".
4. The blast design must be prepared by the certified blaster.
5. The powder factor is much too low to achieve adequate breakage.
6. If no residential or public dwellings within 1/2 mile of the blast area then the Permittee does not need to stay under the 5-pound limit.

## **MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

### **Analysis:**

#### **Affected area maps**

Several maps show the permit boundaries and proposed mining areas. Those maps are considered adequate to serve as the affected area map.

#### **Mining facilities maps**

Plate 2-4G does not show the contour 100 feet outside the disturbed area. See R645-301-521.151

#### **Mine workings maps**

The mine maps for the two seams in the Wild Horse Ridge project are Plate 3-4A Bear Canyon seam (lower) and Plate 3-4C Tank seam (upper).

#### **Monitoring and sample location maps**

The Division hydrologist and geologist will review this section.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the

requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-521.151**, The Permittee must have the contours extend at least 100 feet beyond the permit boundary on Plate 2-4G.

## **RECLAMATION PLAN**

### **APPROXIMATE ORIGINAL CONTOUR RESTORATION**

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

#### **Analysis:**

The Permittee did not address this issue in the amendment. The Division needs to have detailed contour maps and cross sections that show the topography pre existing, operational and reclaimed topography. The approximate original contour issues associated with the Wild Horse Ridge project are highwall elimination and cut slope retention.

The Permittee did not request a variance from the approximate original contour requirements. Therefore the Division assumes that the Permittee plans to restore the site to AOC.

#### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-553.110**, The Permittee must show that the reclamation plan will comply with the approximate original contours. The Division needs to know how highwall will be reclaimed and what cut slopes if any will be left.

## **BACKFILLING AND GRADING**

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552,

-301-553, -302-230, -302-231, -302-232, -302-233.

**Analysis:**

**General**

The Permittee must give the Division detailed cross sections that show how the highwalls will be eliminated and what cut slopes will be left. The Permittee did not include stability analysis for the reclaimed slopes. The Division needs a slope stability analysis for the reclaimed slopes to determine that they will meet the minimum safety factor of 1.3.

The Permittee states that no spoil will be generated in the Wild Horse Ridge project. Therefore, the Permittee does not have to address spoil disposal.

The Permittee states that no coal mine waste will be brought to the surface from the Wild Horse Ridge project. The Division concern is that during development of the Wild Horse Ridge project the Permittee may have to bring unexpected coal processing waste to the surface. If that were to happen, the Permittee does not have a plan to dispose of the coal processing waste. The Permittee must have a contingency plan to handle coal processing waste.

The Permittee needs to give the Division detailed cross sections that show how the coal seams will be backfilled.

The Permittee states that terraces will not be used except in steep slope areas. The Permittee must give the Division detailed cross sections that show the terraces.

**Previously mined areas**

No previously mined areas exist in the Wild Horse Ridge project.

**Backfilling and grading on steep slopes**

The Permittee needs to give the Division detailed cross section of all steep cut areas.

**Special provisions for steep slope mining**

This section deals mostly with mountain top removal that will not be done at the Wild Horse Ridge site.

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in

accordance with:

**R645-301-553.100 and R645-301-542.200**, The Permittee must give the Division detailed cross sections that show the reclamation of each highwall and what cut slopes if any will be retained.

**R645-301-553.130**, The Permittee must show that all reclaimed slopes will have a safety factor of at least 1.3. The safety factor analysis in the amendment appears to deal only with the slopes in the operational phase.

**R645-301-542.730**, The Permittee must have a contingency plan for disposal of coal mine waste brought to the surface.

**R645-301-542.200**, The Permittee must give the Division detailed cross sections that show how the coal seams will be backfilled, and any terraces.

## **MINE OPENINGS**

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

### **Analysis:**

The mine opening closure plan is given in Section 3.6.3.1 of the approved MRP. The plan is adequate for the mine openings at the Wild Horse Ridge.

### **Findings:**

The Permittee met the minimum requirements of this section.

## **ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

### **Analysis:**

#### **Reclamation**

In Section 3.6.12 of the Wild Horse Ridge amendment, the Permittee states that the portal

pad access road will be backfilled. As fill material is placed on the access road, it will result in narrowing the road width, while backfilling the cut slope. Large diameter rocks will be incorporated into the outslope created by filling to aid in surface stability. This procedure will be followed until most of the cuts are backfilled and the road has been narrowed to a "pilot cut" which will still allow the equipment access to the area. The pilot cut will then be reclaimed in the same manner as the Tank Seam Access Road described in Section 3.6.11.

The Permittee did not address road closure during reclamation, or how the roads that provide access to the conveyors would be reclaimed, or the condition that the main access road will be left in and how the road surface material will be disposed.

### **Retention**

The Permittee must also give detailed information about the condition of the main access road after reclamation.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-542.610**, The Permittee needs to state that all roads that will be reclaimed will be closed to the public during reclamation.

**R645-301-542.620**, The Permittee needs to describe how the road culverts will be reclaimed.

**R645-301-542.630**, The Permittee must describe how the road beds will be scarified or ripped during reclamation.

**R645-301-542.640**, The Permittee must describe how the road surface material will be disposed.

**R645-301-527.200**, The Permittee must give the Division detailed plans for the main access road after final reclamation.

## **HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56,

817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

**Analysis:**

**Discharges into an underground mine**

The Permittee needs to state if any discharges into the underground mine will occur during or after final reclamation.

**Gravity discharges**

The Permittee needs to state if there will be any gravity discharges from the mine after final reclamation.

**Sedimentation ponds**

The Permittee did not include the sediment pond removal in the detailed reclamation timetable. The Division needs this information to ensure adequate sediment controls will be kept during reclamation. R645-301-542.500

**Impoundments**

The Permittee did not include the sediment pond removal in the detailed reclamation timetable. The Division needs this information to ensure adequate sediment controls will be kept during reclamation. R645-301-542.500

**Casing and sealing of wells**

The Permittee did not include the sediment pond removal in the detailed reclamation timetable. The Division needs this information to ensure adequate sediment controls will be kept during reclamation. R645-301-542.500

**Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-542.500**, The Permittee must include the removal of the sediment pond

in the sequence of events in the detailed reclamation timetable.

**R645-301-121.200**, The Permittee must state in Section 3 if after reclamation there will be gravity discharge from the mine or there will be discharge into the mine.

## **CONTEMPORANEOUS RECLAMATION**

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

### **Analysis:**

The Permittee did not state if there will be any contemporaneous reclamation associated with the Wild Horse Ridge Project.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-121.200**, The Permittee must state if any contemporaneous reclamation will be associated with the Wild Horse Ridge project.

## **CESSATION OF OPERATIONS**

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

### **Analysis:**

The plan for cessation of the operation is part of the approved MRP.

### **Findings:**

The Permittee met the minimum requirements of this section.

## **MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

### **Analysis:**

#### **Reclamation backfilling and grading maps**

The Permittee must give the Division detailed maps that show how the backfilling and grading requirements will be met.

#### **Reclamation facilities maps**

The Permittee must give the Division detailed maps of all reclaimed facilities including but not limited to the access road.

#### **Final surface configuration maps**

The Permittee must give the Division detailed maps and cross sections that show the final surface configuration.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-542.200,** The Permittee must give the Division detailed maps and cross sections that show the anticipated final surface configuration. The maps and cross section must contain enough information so that reclamation costs can be calculated.

## **BONDING AND INSURANCE REQUIREMENTS**

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

**Analysis:**

**Determination of bond amount**

The Division will evaluate the bond amount when the reclamation plan has been approved.

**Findings:**

The Division will evaluate the bond amount when the reclamation plan has been approved.

**RECOMMENDATIONS:**

The Division should deny the Wild Horse Ridge amendment until the Permittee corrects the deficiencies.

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